Under an electric control, a full close position of the valve element **1** is so arranged that the gear **21** does not abut against the stopper **47**. When the electric control is released, the valve element **1** is further moved so that the gear **21** abuts against the stopper **47**. This is a mechanical full close position.

In case that the valve element **1** is swung to the mechanical full close position, a large inertia force is applied to the stopper **47**. In order to counteract such inertia force, the stopper **47** is firmly screw mounted to a seat **2***e* of the body **2**, but. The stopper **47** includes a threaded portion to adjust the position thereof.

As has been described above, according to the present invention, it is possible to provide an air flow rate control apparatus in which the mechanical hysteresis and the electrical hysteresis may be reduced based on an arrangement which is superior in cost performance, and the accuracy of the throttle position control in controlling the position of an actuator such as a motor is improved.

Incidentally, the covers **5**, **6** and **20** can be made of resin such as PBT (Polybutyleneterephthalate) with 30% glass fiber filler, as shown in FIG. **8**.

What is claimed is:

1. An air flow rate control apparatus for controlling an amount of air to be taken into an engine, comprising:

a control valve disposed within an air flow passage through which an air flows;

a body defining a portion of the air flow passage and rotatably accommodating said control valve;

a cover attached to said body;

a motor driven means for driving said control valve to a predetermined opening degree;

a switching means for selectively disconnecting said driven means from said control valve;

a detector for detecting a rotational position of a valve shaft to which said control valve is mounted as an opening degree of said control valve said detector disposed at an end portion of said valve shaft opposite to said motor driven means; and

a controller for processing a controlled variable of an opening degree of said control valve in accordance with a detection signal from the detector and outputting to said driven means a command signal corresponding to said controlled variable; and

an interface portion allowing an electrical data exchange among said detector, said driven means and said controller, and/or an electrical data exchange between these components and the outside of said apparatus through said interface portion, said interface portion disposed at the same side of said valve shaft as said detector is.

2. A motor driven throttle valve system comprising:

a throttle body in which a throttle valve is mounted;

a recess portion provided adjacent said throttle valve for housing therein a motor for driving said throttle valve; and

a through hole for communicating said recess portion the outside thereof, through which an electric wire extends from said motor to the outside.

3. A motor driven throttle valve system comprising:

a throttle body with an air intake passage;

a throttle valve element disposed in said air intake passage for changing an effective cross sectional area of said passage

a throttle shaft rotatably mounted in said throttle body for swinging said throttle valve element;

a motor for driving said throttle shaft through gear means provided on one end portion of said throttle shaft;

a position sensor provided on the other end portion of said throttle shaft for detecting a rotational displacement of said shaft;

a recess portion provided in said throttle body adjacent said throttle valve element for housing therein a motor for driving said throttle valve;

a through hole for communicating said recess portion with the outside thereof, through which an electric wire extends from said motor to the outside;

a cover member attached to said throttle body for covering said position sensor, through which electric wires from said motor and said position sensor extend out of the system.

4. A motor driven throttle valve system comprising:

a body provided therein with an air intake passage;

a shaft rotatably mounted in said body;

a throttle valve element fixedly mounted to said shaft for changing an effective cross sectional area of said passage in accordance with a swing of said shaft;

a cover attached to said body to define therebetween a space;

a sensor disposed within said space for detecting an angular displacement of said shaft;

a motor mounted to said body;

a mechanism for transmitting a rotational torque from said motor to said shaft; and

a connector mounted to said cover, said connector including an output terminal of said sensor and an input terminal of said motor means.

5. A motor driven throttle valve system according to claim **1**, further comprising a lost motion spring mechanism for applying a rotational force against said shaft so as to characterize a transmission characteristic of a torque to be transmitted from said motor to said shaft through said torque transmission mechanism, said spring mechanism being disposed within said space.

6. A motor driven throttle valve system according to claim **1**, wherein said means and said torque transmission mechanism are provided on opposite end portions of said shaft.

7. A motor driven throttle valve system according to claim **6**, further comprising a lost motion spring mechanism for applying a rotational force against said shaft so as to characterize a transmission characteristic of a torque to be transmitted from said motor to said shaft through said torque transmission mechanism, said spring mechanism being disposed within said space.

8. An air flow rate control apparatus for controlling an amount of air to be taken into an engine, comprising:

a control valve disposed within an air flow passage through which said air flows;

a body defining a portion of said air flow passage and rotatably accommodating said control valve;

a cover attached to said body;

a motor driven means for driving said control valve to a predetermined opening degree;

a detector for detecting a rotational position of a valve shaft to which said control valve is mounted as an opening degree of said control valve, said detector disposed at an end portion of said valve shaft opposite to said motor driven means; and

an interface portion for allowing an electrical data exchange between said detector and said driven means, and the outside of said apparatus through said interface portion, said interface portion disposed at the same side of said valve shaft as said detector is.

9. An apparatus according to claim **8**, wherein an opening for allowing a communication between said space and the outside thereof is provided.

10. An apparatus according to claim **8**, wherein said interface portion is provided on said cover.

11. An apparatus according to claim **8**, wherein said driven means further comprises a switching means capable of selectively disconnecting said driven means from said control valve.

12. An apparatus according to claim **11**, wherein an opening for allowing a communication between said space and the outside thereof is provided.

13. An apparatus according to claim **11**, wherein said interface portion is provided on said cover.

14. A throttle valve system comprising:

a throttle body with an air intake passage;

a throttle valve element disposed in said air intake passage for changing an effective cross sectional area of said passage;

a throttle valve shaft rotatably mounted on a bearing in said throttle body for swinging said throttle valve element;

a first metal bushing press-fitted at an outer periphery thereof to a recess portion of said throttle body and coaxially said throttle shaft; and

a throttle position sensor, said sensor including:

a sensor element;

a second metal bushing fitted to said first metal bushing to support said sensor element;

a slider rotatably mounted to said second metal bushing;

a transmitting member provided between said throttle valve shaft and said slider thereby said slider is rotated by said throttle valve shaft;

a conductive element provided on the surface of said throttle position sensor element; and

a slider element mounted on said slider for providing electrical contact to said conductive element.

15. A system according to claim **14**, wherein a sealing rubber ring is provided between an inner periphery of said first metal bushing and an outer periphery of said throttle valve shaft.

16. A system according to claim **14**, wherein said slider is axially urged by means of a spring, thereby being in contact with said conductive element at a predetermined contact pressure.

17. A motor driven throttle valve system comprising:

a throttle body with an air intake passage;

a throttle valve element disposed in said air intake passage for changing an effective cross sectional area of said passage;

a throttle valve shaft rotatably mounted in said throttle body for swinging said throttle valve element;

a motor for driving said throttle valve shaft through gear means provided on one end portion of said throttle valve shaft;

a throttle position sensor provided on the other end portion of said throttle valve shaft for detecting a rotational displacement of said throttle valve shaft;

a recess portion provided in said throttle body adjacent said throttle valve element for housing therein said motor;

a microcomputer electrically connected to said throttle position sensor and said motor; and

a cover member attached to said throttle body for covering said throttle position sensor and said microcomputer.

18. A system according to claim **17**, said throttle position sensor is covered by a control unit attached to said throttle body, and wherein said microcomputer is attached to said control unit, and wherein said control unit is covered by said cover member.

19. A system according to claim **17**, wherein said microcomputer is electrically connected to an accelerator position sensor.

20. A system according to claim **19**, wherein said accelerator position sensor is attached to said cover.

* * * * *

21. (New) An airflow rate control apparatus comprising a throttle valve element driven by a motor ; a throttle sensor for detecting an opening degree of the throttle valve element and a control circuit including a control circuit for the motor, wherein the control circuit is provided on or in a cover means provided with a connector as an interface to the outside.

22. (New) An apparatus according to claim 21, further comprising a switching means capable of selectively disconnecting said motor from said throttle valve element.

23. (New) An apparatus according to one of the preceding claims, wherein said connector is provided on said cover means.

24. (New) An apparatus according to one of the preceding claims, wherein said control circuit is adapted for processing a signal received from said throttle sensor and for outputting a command signal to said motor in response thereto.

25. (New) An apparatus according to one of the preceding claims, wherein said connector is including an output terminal of said throttle sensor and an input terminal for the connection to an external power supply.

26. (New) An apparatus according to claim 21, wherein the cover means forms a space together with a throttle body for accommodating the throttle sensor in the space.